

What is Claimed Is:

1. A vent structure for an air handling system, the vent structure comprising:

an inlet-connector section at an inlet end of the vent structure, the inlet-

5 connector section being adapted for connection with an inlet duct from which the vent structure receives a flow of air;

an outlet section at an outlet end of the vent structure, the outlet section including an outlet slot adapted to direct the flow of air into a room; and

a transition section between the inlet-connector section and outlet section, the
10 transition section having a flared portion that diverges in cross-sectional area as it extends generally toward the outlet section, the transition section having a constricted portion located between the inlet-connector section and the outlet slot and located substantially centrally within a plane that is generally perpendicular to a direction of air flow, the constricted portion being adapted to restrict the flow of air through a central portion of the transition section,
15 thereby restricting the flow of air exiting a corresponding central portion of the outlet slot.

2. The vent structure of claim 1 wherein a cross-sectional area of the outlet slot is greater than a cross-sectional area of the inlet connector section.

20 3. The vent structure of claim 1 wherein the inlet-connector section has a substantially cylindrical shape adapted to mate with an inlet duct having a generally circular cross section.

4. The vent structure of claim 3 wherein a width of the outlet slot is greater than a diameter of the cylindrical inlet-connector section.

5. The vent structure of claim 3 wherein the outlet slot has a generally rectangular configuration and wherein the transition section is shaped and configured to provide a smooth transition between the circular cross section of the inlet duct and the generally rectangular configuration of the outlet slot.

6. The vent structure of claim 1 wherein the constricted portion of the transition section is generally aligned with the inlet connector section in a manner so that the constricted portion is located within a central portion of a flow path of air received from the inlet duct.

7. The vent structure of claim 1 wherein the inlet-connector section is adapted to receive air from an inlet duct generally along an inlet axis, and wherein the transition and outlet sections of the vent structure are configured to maintain the direction of air flow generally along the inlet axis.

8. The vent structure of claim 7 wherein the constricted portion of the transition section lies generally along the inlet axis.

9. The vent structure of claim 1 wherein the outlet slot has a generally rectangular configuration defined by left and right end margins and generally parallel upper and lower margins, the upper and lower margins of the slot being longer in dimension than

the left and right end margins such that a width of the outlet slot is greater than a height of the outlet slot, and wherein the flared portion of the transition section is defined by generally parallel upper and lower walls and left and right side portions, the left and right side portions being angled relative to one another such that the flared portion diverges in width as it
5 extends toward the outlet section.

10. The vent structure of claim 9 wherein the constricted portion of the transition section is defined by the upper and lower walls of the flared portion, which are contoured in a manner to restrict the flow of air through the central portion of the transition section and
10 thereby provide a generally uniform velocity profile of air flow exiting the outlet slot.

11. A vent structure for an air handling system, the vent structure comprising:
an inlet-connector section at an inlet end of the vent structure, the inlet-connector section being adapted for connection with an inlet duct from which the vent
15 structure receives a flow of air;

an outlet section at an outlet end of the vent structure, the outlet section including a generally rectangular outlet slot adapted to direct the flow of air into a room, the outlet slot being defined by left and right end margins and generally parallel upper and lower margins, the upper and lower margins of the slot being longer in dimension than the left and
20 right end margins such that a width of the outlet slot is greater than a height of the outlet slot;
and

a transition section between the inlet-connector section and outlet section, the transition section having a flared portion defined by generally parallel upper and lower walls and left and right side portions, the left and right side portions of the flared portion being

angled relative to one another such that the flared portion diverges in width as it extends toward the outlet section, the upper and lower walls of the flared portion of the transition section being contoured in a manner to define a constricted portion of the transition section located generally centrally between the left and right side portions of the flared portion for
5 restricting the flow of air through the constricted portion, thereby restricting the flow of air exiting a corresponding generally central portion of the outlet slot.

12. The vent structure of claim 11 wherein a cross-sectional area of the outlet slot is greater than a cross-sectional area of the inlet connector section.

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13. The vent structure of claim 11 wherein the inlet-connector section has a substantially cylindrical shape adapted to mate with an inlet duct having a generally circular cross section.

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14. The vent structure of claim 13 wherein the transition section is shaped and configured to provide a smooth transition between the circular cross section of the inlet duct and the generally rectangular outlet slot.

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15. The vent structure of claim 11 wherein the constricted portion of the transition section is generally aligned with the inlet-connector section in a manner so that the constricted portion is located within a central portion of a flow path of air received from the inlet duct.

16. The vent structure of claim 11 wherein the inlet-connector section is adapted to receive air from an inlet duct generally along an inlet axis, and wherein the transition and outlet sections of the vent structure are configured to maintain a direction of flow generally along the inlet axis.

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17. The vent structure of claim 16 wherein the constricted portion of the transition section lies generally along the inlet axis.

18. A vent structure for an air handling system, the vent structure comprising:

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an inlet-connector section at an inlet end of the vent structure, the inlet-connector section being adapted for connection with an inlet duct from which the vent structure receives a flow of air;

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an outlet section at an outlet end of the vent structure, the outlet section including a generally rectangular outlet slot adapted to direct the flow of air into a room, the outlet slot being defined by left and right end margins and generally parallel upper and lower margins, the upper and lower margins of the slot being longer in dimension than the left and right end margins such that a width of the outlet slot is greater than a height of the outlet slot; and

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a transition section adapted to provide fluid communication between the inlet-connector section and outlet section, the transition section having a flared portion defined by upper and lower walls and left and right side portions, the left and right side portions being angled relative to one another such that the flared portion diverges in width as it extends toward the outlet section, at least one of the upper and lower walls of the flared portion having a protrusion that extends generally toward the other of the upper and lower walls in a

manner to restrict a part of the flow of air through the flared portion, thereby restricting a corresponding part of the flow of air exiting the outlet slot.

19. The vent structure of claim 18 wherein the protrusion occupies a generally
5 central portion of a flow path of air through the flared portion so that a corresponding central part of the flow of air exiting the outlet slot is restricted, thereby providing a generally uniform velocity profile of air flow exiting the outlet slot.

20. The vent structure of claim 18 wherein the inlet-connector section has a
10 substantially cylindrical shape adapted to mate with an inlet duct having a generally circular cross section.

21. The vent structure of claim 20 wherein the transition section is shaped and
configured to provide a smooth transition between the circular cross section of the inlet duct
15 and the generally rectangular outlet slot.

22. The vent structure of claim 18 wherein each of the upper and lower walls of
the flared portion includes a protrusion that extends generally toward the other of the upper
and lower walls in a manner to restrict the part of the flow of air through the flared portion.

23. The vent structure of claim 22 wherein the protrusions are defined by
20 contoured portions of the upper and lower walls of the flared portion, which define a constricted portion of the transition section, which restricts the flow of air passing through the constricted portion, thereby restricting the flow of air exiting a corresponding portion of the

outlet slot.

24. The vent structure of claim 23 wherein the constricted portion is generally aligned with the inlet-connector section in a manner so that the constricted portion is located
5 generally within a center of the flow path of air received from the inlet duct.

25. The vent structure of claim 18 wherein the inlet-connector section is adapted to receive air from an inlet duct generally along an inlet axis, and wherein the transition and outlet sections of the vent structure are configured to maintain a direction of flow generally
10 along the inlet axis.

26. The vent structure of claim 25 wherein the constricted portion lies generally along the inlet axis.

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